Q fever

Bioterrorism Agent Profiles for Health Care Workers

Causative Agent:

Q fever is a zoonotic disease caused by a rickettsia *Coxiella burnetii*.

Route of Exposure:

Humans usually acquire Q fever through the inhalation of airborne particles. Sheep, cattle, and goats can serve as reservoirs for the agent. Consumption of contaminated food or water can also result in infection.

Infective Dose & Infectivity:

1-10 Organisms

Incubation Period:

The incubation period ranges from 10 to 40 days.

Clinical Effects:

Q fever generally occurs as a self-limiting illness lasting 2 days to 2 weeks. The disease generally presents as an acute non-differentiated febrile illness with headaches, fatigue and myalgias as prominent symptoms. Pneumonia, manifested only by an abnormal chest X-ray occurs in about 50% of all patients. Non-productive cough and pleuritic chest pain can also occur. Uncommon complications of Q fever infection include: chronic hepatitis, endocarditis, aseptic meningitis, encephalitis, and osteomyelitis.

Lethality:

While highly incapacitating, the mortality rate due to Q fever is extremely low (<1-3%).

Transmissibility (person to person):

Transmission from person-to-person is extremely rare.

Primary contaminations & Methods of Dissemination:

Most likely route of dissemination would be through aerosolization. Additionally, the organism could be disseminated through sabotage of the food supply.

Secondary Contamination & Persistence of organism:

Persons who are exposed to Q fever through the aerosol route do not present a risk for secondary contamination or re-aerosolization of the organism. The organism has unusual stability and is highly resistant to many disinfectants.

Decontamination & Isolation:

Patients- Patients can be treated using standard precautions. Gross decontamination is not necessary.

Equipment, clothing & other objects- Contaminated surfaces and clothing can be decontaminated with 0.05% hypochlorite or a 1:100 solution of Lysol.

Outbreak control:

Since secondary cases are unlikely, outbreak control measures are not recommended.

Treatment:

Tetracycline 500 mg every 6 hours for 5-7 days, or doxycycline 100 mg every 12 hours for 5-7 days are the recommended treatments. A combination of erythromycin 500 mg every 6 hrs plus rifampin 600 mg once daily for 5-7 days is also effective.

Prophylaxis:

Treatment with tetracycline during the incubation period may delay, but will not prevent the onset of symptoms. An investigational whole cell vaccine also exists.

Differential Diagnosis:

Q fever must be differentiated from pneumonias caused by mycoplasma, *Legionella pneumophila*, *Chlamydia psitacci*, or *Chlamydia pneumoniae*.

References:

Chin, James. *Control of Communicable Diseases Manual*, Seventeenth Edition, American Public Health Association, 2000.

Kortepeter M, Christopher G, Cieslak T, et al. *Medical Management of Biological Casualties Handbook*, U.S. Army Medical Research Institute of Infectious Diseases, U.S. Department of Defense, February 2001.
Available at http://www.nbc-med.org/SiteContent/HomePage/WhatsNew/MedManual/Feb01/handbook.htm. Accessed September 2001.

Sidell FR, Takafuji ET, Franz DR. *Military Aspects of Chemical and Biological Warfare*. Office of the Surgeon General, U. S. Army. Borden Inst., WRAMC, 1997.

Developed by: Arizona Department of Health Services & Samaritan Regional Poison Center
23 August 2001